

**a comparative study
of food consumption data**

**from food balance sheets
and household surveys**

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Statistics Division

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A Comparative Study of Food Consumption Data from Food Balance Sheets and Household Surveys

I. Introduction

At present the FAO food balance sheets represent the only source of worldwide information on food supply/consumption levels. National surveys providing food consumption data are still limited in number and usually correspond to different time periods. In view of this, the 5th World Food Survey, with its predecessors, will have to rely heavily on food balance sheets for assessing global food supply/consumption conditions. National household surveys will not be ignored, rather they will be used to complement the information obtained from food balance sheets since they are the only source of data on the distribution of food consumption and its relationship with other socio-economic and anthropometric variables. In this connection, a question arises on the relationship between the national per capita food supply/consumption levels obtained from the two data sources. Due to differences in concepts and definitions used and to measurement errors, the data from the two sources are expected to be neither similar nor directly comparable. It is the purpose of this paper to investigate this problem. After describing the two major sources and the related concepts and definitions, and examining the reliability of the data, an attempt is made to compare the per capita food consumption figures provided by a number of household surveys with the corresponding per capita food supply figures derived from the currently available FAO food balance sheets. The paper also aims at documenting the major sources and the magnitude of the discrepancies that are observed between the data from the two major sources.

II. Food Balance Sheets

Food balance sheets present a comprehensive picture of a country's food supply during the specific reference periods. They show the sources of supply and uses of each food item, i.e. each commodity potentially available for human consumption. The total quantity of foodstuffs produced in a country added to the total quantity imported and adjusted for any change in stocks that may have occurred within the reference period gives the supply available during that period. On the utilization side distinctions are made between the quantities that are exported, fed to livestock, used for seed, used for industrial and other non-food purposes, wasted during storage and transportation, and those made available for domestic utilization. The total food supplies for domestic utilization estimated are the total food supplies available for human consumption in the household and non-household sectors. The non-household sector covers catering establishments, boarding schools, hospitals, prisons, armed forces bases and other communities. Wastage on the farm and during distribution and processing is taken into account in the food balance sheets. However, the amount of food actually consumed may be lower than the quantity shown in the food balance sheets due to losses of edible food and nutrients in the household and non-household sectors, i.e. losses which are accounted for during storage, preparation and cooking, plate-waste and quantities fed to domestic animals and pets or thrown away.

The per capita supply of each food item available for human consumption is obtained by dividing the total food supplies available for human consumption by the total population partaking of them during the reference period. The per capita supply of each food item is then converted into common nutritional units, i.e. calories, protein and fat by applying appropriate nutritional conversion factors. The conversion factors are derived from the Food Composition Tables prepared by the Food Policy and Nutrition Division of FAO and the U.S. Department of Health, Education and Welfare.

The reliability of food supply figures depends on the availability and accuracy of the basic national data on which they are based. The relevant national data include production, stock, population, import and export statistics. Of these, the accuracy of production, stock, and production data seems to be the most questionable, especially in developing countries, where an appreciable part of total production is non-commercial or subsistence production, i.e. foodstuff grown or gathered wild by households for their own consumption. The estimation of production of some crops is further complicated because they are continuously harvested at regular or irregular intervals over a long period of time (e.g. cassava, some fruits and vegetables). Moreover, for certain crops the produce is not completely harvested, but some of it is either kept as a reserve from which to draw if the need arises or even left to rot (e.g. cassava and plantain). Certain kinds of food may not be covered by food balance sheets because they are not included in national production statistics. Meats, such as those of game, wild animals and insects, as well as some crops may be excluded in this manner. Under conditions such as those prevailing in many developing countries, these meats may form a substantial part of the low consumption level of animal protein. Per capita food consumption data derived from household surveys, multiplied by population numbers, could possibly provide the required production estimates.

In estimating food supplies, account must be taken of stocks. Typically, stocks are increased after good harvests and run down following poor harvests. Stocks are important in most countries whether at the farm or national level. Cereals are the most commonly stocked food items, but are by no means the only ones. While statistics on commercial stocks of cereals and livestock products are sometimes available from official or unofficial sources, information on farm stocks are generally not available and may be very difficult if not impossible to estimate.

Seeding rates per hectare for crops are usually fairly well established in most countries, but when the quantities used for feeding animals have to be estimated, the judgement must consider many aspects. Feeding practices vary from country to country according to the quantity and quality of pastures, the degree to which rearing is intensive, the prices of feedstuffs, etc. In addition, the quality of grain and other foods fed to livestock may vary from year to year.

Of the basic statistics, import and export figures are the most accurate, although in some countries there may be significant amounts of trade across national boundaries that go unrecorded.

For many countries national nutritional conversion factors are not available for some food items and international figures have to be used for calculating the nutritive value of the diet. This also may affect the accuracy of the estimated nutritional levels.

Regardless of the deficiencies mentioned above which may be partly, if not totally, eliminated by external consistency checking using supplementary information, such as household survey results as well as relevant technical, nutritional and economic expertise, food balance sheets continue to be a most useful tool for a broad assessment and for an international comparison of food consumption levels in different countries.

III. National Household Surveys

The second major source of data on food consumption are national household surveys. Three types of household surveys have been conducted in various countries. They are the income/expenditure/budget survey, the specialized food consumption survey, and the multi-subject survey. The types of data on food consumption obtained through household inquiries vary from one type of household survey to another.

i) Income/expenditure/budget surveys are primarily concerned with providing detailed data on household income and expenditure for investigating the economic behaviour of consumers and for other purposes, such as construction of cost of living indices. In a number of surveys, data on food quantities are also obtained, especially in cases where home-produced food is an important part of food consumption or where the collection of data on quantities is a prerequisite to arriving at expenditure data. However, the majority of such surveys do not process and tabulate the quantity data obtained but only provide the amount of money spent on food or the value of food consumed.

Normally, when data on food consumption are collected, the value and quantity of such food items consumed in the household are noted either by the interviewing or the recording method, and may include food purchased or bartered, food obtained as a gift or pay, home produce, food gathered wild (and in some surveys food drawn from household supplies) during the reference period - which is usually a period of 5, 7 or 30 days preceding the day of enquiry. In the case of home produce, the weighing method is also applied. The food consumption data obtained represent the total quantity of food acquired by or available to the household during the reference period. In other words, they refer to the flow of food into households independently of its consumptive use and without taking into account wastage or losses of edible food. Per capita food availability is then obtained by dividing the total food available to the household during the reference period by the number of partakers.

ii) The specialized food consumption surveys use a more elaborate definition of consumption than that of the more common budgetary survey; most attention is focused on quantities and nutritional values rather than on monetary outlays. The information on food consumption includes not only food consumed in the household but also food consumed away from home, i.e. any food and beverages, meals and snacks, eaten outside the home by the members of the household. The information on household food consumption are obtained by weighing and measuring food items to be used, before the preparation of each meal (in some surveys, food wasted on the plate is also weighed), while the information on food consumed away from home are obtained by interviewing each member of the household. The enumerations are normally carried out for a period of 2, 5 and 7 consecutive days. The whole process of recording calls for very careful supervision by the interviewer and the close cooperation of the respondents. The surveys are rather complicated and costly to undertake. As a result, few countries have conducted such surveys in recent years. The food consumption data obtained from this type of survey represent an estimate of the quantity of food intakes.

iii) Multi-subject surveys give emphasis to a broad spectrum of data, combining two or more major topics, such as family characteristics, income, employment, education, housing, nutrition and health. When an immediate need exists for a wide variety of data, the multi-subject survey has advantages of speed and economy. Such multi-subject surveys have also the advantage that different aspects of living conditions can be seen in relation to each other. When the nutritional aspect is included in the multi-subject survey, information on food consumption is obtained. Normally, the value and quantity of food items consumed in the household are recorded. Thus the data on food consumption obtained are similar to those obtained through the income/expenditure/budget survey. However, in some surveys, a section of sample households are selected as a sub-sample from which data on food consumption are obtained by weighing and measuring each food item consumed. In such cases the data on food consumption obtained are similar to those obtained through the specialized food consumption survey.

Household surveys collect information on food consumption only from the household sector. The non-household sector is not covered in the survey frame.

However, as already mentioned, in some surveys, especially in the specialized food consumption surveys, attempts are made to collect information of food consumed away from home. In practice, however, it has been found that the accuracy of the data obtained is doubtful. Some questions asked may be regarded as an interference into the privacy of the respondent and thus not answered accurately. Further, some responses may be inaccurate as a result of poor memory. On the whole, such data can only be regarded as rough estimates. Methods of improving these data should be developed, and their inclusion in surveys should be encouraged so that the total food intake levels of the household population can be obtained.

In the household surveys, sampling techniques are used to select sample households and to estimate the statistical accuracy of the data obtained. Since they are sample surveys, i.e. incomplete enumeration, the data obtained are subject to sampling errors. In addition there are errors of measurements (non sampling errors). Theoretically, the magnitude and direction of these sampling errors can be determined and calculated; however, in practice only a few surveys provide such information. Further, only a few countries have repeated the same surveys after short intervals. Thus, the accuracy of the data obtained from most of the household surveys cannot be checked.

It is hoped that in the future such deficiencies of household surveys will be eliminated as statisticians become more familiar with the sampling methods and as the public become accustomed to participating in the surveys.

IV. Relationship between food balance sheets and household surveys

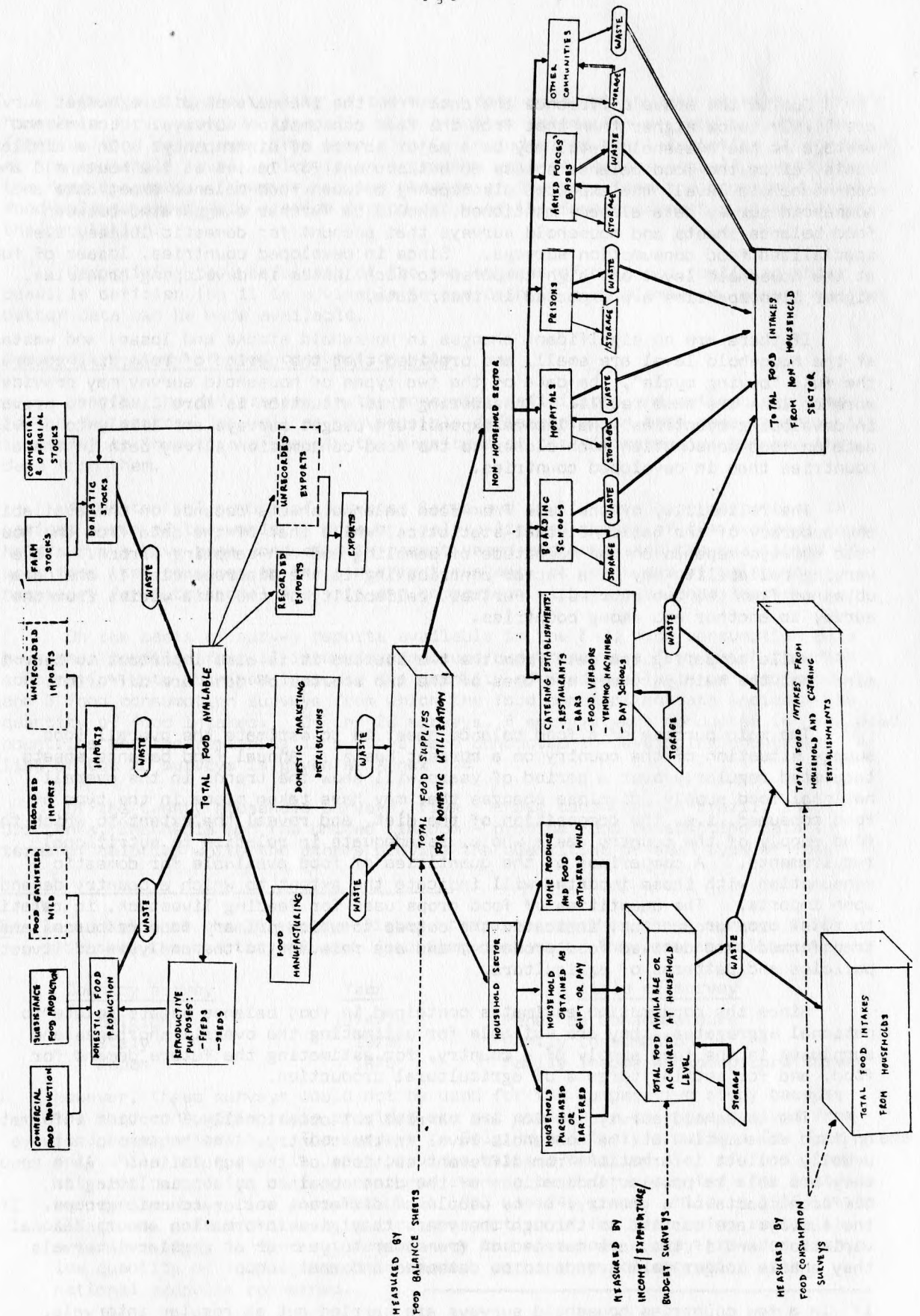
The relationship between food balance sheets and the different types of household survey can be illustrated by a diagram of the food distribution system (Chart 1). This chart relates the various measurements to the appropriate stages in the distribution chain.

The food balance sheet measures total food supplies for domestic utilization which is at the most aggregate level of the food distribution system since it includes supplies for both the household and non-household sectors. The income/expenditure/budget survey measures total food available or acquired at the household level. The specialized food consumption survey, whether carried out independently or in conjunction with multi-subject surveys, measures quantities of food at the ultimate stage of the food distribution system, i.e. the consumers.

From the above it is clear that an important difference between food balance sheets and household surveys lies in the fact that the latter do not in general cover food consumed outside of the home, i.e. in the non-household sector. This may explain a major part of the discrepancy between the data obtained from household surveys and those derived from food balance sheets. It can be anticipated that the discrepancy would be pronounced in the developed countries where the opportunity for people to consume food away from the household is high. However, the data from the two sources may be close if the household surveys take into account food consumed away from home (i.e. food consumed in catering establishments) in their measurements.

The chart also shows the difference between the food consumption measurement in income/expenditure/budget surveys and in specialized food consumption surveys. When data are collected through a household income/expenditure/budget survey, the concept usually applied is that of food acquired or available during the reference period. This quantity of food acquired or available may or may not be fully consumed by the households. Therefore, the per capita food acquired or availability estimates obtained do not necessarily indicate what is actually consumed by individuals. On the other hand, in the specialized food consumption surveys, the information obtained represents the per capita food intakes.

Chart 1. Food Distribution System



Due to the above difference the data from the income/expenditure/budget surveys are likely to be higher than that from the food consumption surveys. Losses and wastage at the household level may be a major source of discrepancy. On a similar basis, since the food balance sheets do not account for losses at the household and non-household level, the expected discrepancy between food balance sheet data and household survey data already mentioned, should be further exaggerated between food balance sheets and household surveys that account for domestic losses, i.e. specialized food consumption surveys. Since in developed countries, losses of food at the household level are high compared to such losses in developing countries, higher discrepancies are expected in their data.

If there are no significant changes in household stocks and losses and wastage at the household level are small, and provided that the period of recording covers the full "buying cycle", the data of the two types of household survey may provide more or less the same result. Considering this situation is more likely to prevail in developing countries, the income/expenditure/budget surveys are likely to provide data on food consumption much closer to the food consumption survey data in these countries than in developed countries.

The reliability of the data from food balance sheets depends on the availability and accuracy of the basic national statistics, while that of the data from the household surveys depends on the magnitude of sampling and non-sampling errors. Thus varying reliability may be a factor contributing to the discrepancies in the data obtained from the two sources. Further, reliability of the data varies from one survey to another and among countries.

While comparing the data from the two sources it is also important to bear in mind that the main purposes and uses of the two sources of data are different.

The main purpose of a food balance sheet is to estimate the overall food supply situation of the country on a current basis. Annual food balance sheets tabulated regularly over a period of years will show the trends in the overall national food supply, disclose changes that may have taken place in the type of food consumed, i.e. the composition of the diet, and reveal the extent to which the food supply of the country, as a whole, is adequate in relation to nutritional requirements. A comparison of the quantities of food available for domestic consumption with those imported will indicate the extent to which a country depends upon imports. The quantities of food crops used for feeding livestock, in relation to total crop production, indicates the degree to which primary food resources are transformed into derived food products, and are relevant to the analysis of livestock policies and patterns of agriculture.

Since the consumption estimates contained in food balance sheets relate to national aggregates, they are suitable for estimating the overall shortages and surpluses in the food supply of a country, for estimating the future demand for food, and for setting targets of agricultural production.

The household surveys, which are carried out occasionally,^{1/} provide information on food consumption at the household level in the country. The household surveys usually collect information from different sections of the population. As a result, they are able to provide indications of the diet obtained by people living in different parts of a country, or by people of different socio-economic groups. If the surveys are carried on through the year, they give information about seasonal variation, and if they are carried on from year to year or at regular intervals they enable longer term trends to be detected and analyzed.

^{1/} In a few countries household surveys are carried out at regular intervals.

Disregarding the quality of the data, food consumption data obtained through household surveys should generally give a better estimation of food consumption (provided food eaten away from home also is included) as the information is collected at the household level, which is an aggregate unit of persons actually partaking of the food consumed. However, in the absence of the data from the household survey, food balance sheet data provide a good proxy of the food consumption situation of the population.

Recognizing the usefulness of the two sources of data and realizing their possible deficiencies it is advisable to use both in a complementary manner so that better data can be made available.

V. Comparative study of food consumption data

Despite the differences in the concepts, definitions and methodology used in the two sources, as well as the possible deficiencies in both measurements, it is useful to investigate broadly the magnitude of the discrepancies between the data from them.

A substantial number of surveys, large and small, have been undertaken in various parts of the world. However, only a limited number of the national household surveys have been conducted in recent years and published the quantities of each food item consumed or their nutrient content, at least one of which is necessary for nutritional analysis and comparison with food balance sheets.

On the basis of survey reports available in the FAO, food consumption data have been compiled from 17 income/expenditure/budget surveys from which the food consumption data obtained indicate the quantity of food available or acquired, and 3 food consumption surveys from which the food consumption data indicate the quantity of food intakes. Of the 20 surveys, 8 surveys were conducted in developed countries and the remaining 12 surveys were conducted in developing countries. A list of the 20 surveys is given as Annex 1.^{2/}

Of the twenty household surveys, five - those conducted in Brazil, India, Sri Lanka, Indonesia and the United Kingdom - provide food consumption data in terms of calories while the others provide the quantities of each type of food

^{2/} In addition to the 20 surveys listed, there are another three surveys which published the quantity of each food item consumed. They are as follows:

<u>Country survey</u>	<u>Year</u>	<u>Title of survey</u>
Belgium	1974/75	Panel de Consommateurs
Italy	1978	Family Consumption
Japan	1979	Family Income & Expenditure Survey

However, these surveys could not be used for the comparative study because the food consumption data provided are not comparable to those derived from food balance sheets. The surveys in Belgium and Italy provide a few food items only while the survey in Japan provides quite a detailed list of food items, but some quantities of food consumed seem to be under-estimated: for instance, per capita daily rice consumption in 1963 was 244 grams, while in 1969 it was 126 grams. This decrease in rice consumption is far from being realistic. A further study to find out reasons why the household survey provides such a low quantity of food consumed is needed, perhaps in collaboration with national agencies concerned.

consumed or acquired.^{3/} Where only the quantities of food items were available, they were converted into calories using national nutritional conversion factors; when the national conversion factors were not available, international conversion factors were used. It should be noted here that when the quantities consumed have to be converted into numbers of calories, a detailed list of each food item with the corresponding quantity consumed is very useful and enables a more accurate estimation of the calorie consumption than a list of broad food groups. Most of the budget surveys conducted in the developed countries provided a very detailed list of food items consumed in the household; for instance, a survey in Austria provided 67 food items, a survey in France 85 food items, and a survey in the United Kingdom 12 major food groups, with each group being further divided into several sub-groups.

For the purpose of the comparative study, food items were classified into 15 major food groups, namely, cereals and cereal products, roots and tubers, sugar and honey, pulses, nuts and oilseeds, vegetables, fruit, meat and offals, eggs, fish and seafood, milk and milk products, oils and fats, spices, stimulants, and other food items n.e.c. It should be noted that, for certain countries, broader food groupings had to be considered due to limited details provided by surveys. Since the majority of the household surveys do not show the quantities of alcoholic beverages consumed or when they do, then data are normally not very reliable, they were excluded from the data base.

The per capita daily calorie supplies from each group of foods, derived from food balance sheets and the per capita calorie intakes availability derived from the household surveys of each country, are shown in Annex 2.

The comparative study, which covers only the per capita daily calorie consumption obtained from the two sources, is divided into two parts, in the first part, comparisons are made on the overall averages of total calories per capita, (i.e. total calories from all food groups), and in the second part, comparisons are made by food groups. The results of comparisons are shown below.

1) Comparisons of the overall averages of total calories per capita

To investigate the magnitude of difference between the data from the two sources, the absolute and percentage differences in the overall averages of the total calories per capita derived from household survey and food balance sheets were compiled and are shown overleaf.^{4/}

^{3/} It is necessary to note that the nutritional conversion factors of some food items used in those surveys providing data in terms of calories, might differ from the conversion factors used in the food balance sheets. This difference may contribute to the discrepancies between the data from the two sources.

^{4/} In food balance sheets the per capita food supplies are arrived at by dividing the total food supplies by the total resident population during the reference period. However, in many countries, tourists and temporary migrants may significantly add to the number of consumers. This factor may also contribute to the discrepancies between the two sets of data.

Country survey	Per capita daily calories		Difference	
	H.S.	F.B.S.	No. of calories	As % of per capita daily calorie derived from F.B.S.
<u>Developed countries</u>				
<u>The income/expenditure/budget survey</u>				
Austria (1974/75)	2,640	3,293	-653	-19.8
Finland (1976)	2,696	3,049	-353	-11.6
France (1977)	2,694	3,150	-456	-14.5
Germany, F.R. (1978)	2,122	3,208	-1,086	-33.9
Greece (1974)	2,454	3,328	-874	-26.3
Hungary (1971)	2,771	3,165	-394	-12.4
Norway (1977/79)	2,313	3,169	-856	-27.0
United Kingdom (1979)	2,254	3,111	-857	-27.5

Developing countries

The income/expenditure/budget survey

Bangladesh (1973/74)	1,986	1,880	+106	+5.6
Indonesia (1978)	1,917	2,249	-332	-14.8
India (1971/72)	2,170	2,026	+144	+7.1
Iraq (1972)	2,817	2,249	+568	+25.3
Morocco (1970/71)	2,514	2,497	+17	+0.7
Pakistan (1971/72)	1,951	2,223	-272	-12.2
Philippines (1975/76)	2,054	2,039	+15	+0.7
Sri Lanka (1969/70)	2,192	2,363	-171	-7.2
Trinidad & Tobago (1970)	2,633	2,501	+132	+5.3

The food consumption survey

Brazil (1974/75)	2,110	2,439	-329	-13.5
Turkey (1974)	2,292	2,860	-568	-19.9
Tunisia (1975)	2,543	2,632	-89	-3.4

Of the income/expenditure/budget surveys, all conducted in the developed countries provide per capita daily calorie figures that are lower than those derived from food balance sheets, i.e. all the differences are negative. The magnitudes of these differences are rather high and vary from 353 to 1,086 calories or from -11.6 to -33.9 per cent. However, among the developing countries there is no set pattern; the differences are positive and negative. Also the degree of difference is generally lower; it ranges from 15 to 568 calories or from -14.8 to +25.3 per cent.

As shown in the diagram of the food distribution system (Chart 1) the total food supplies for domestic utilization (which are measured by food balance sheets) include the flows into the non-household sector as well as those into the household sector. The fact that all the 17 income/expenditure/budget surveys measured only the part flowing into the household sector (without taking into account food consumed away from the home) contributes to the discrepancies found between the two sets of figures. The extent of the effect of the different coverage depends on the quantity of food flowing into the non-household sector. The more food there is flowing into the non-household sector, the greater will be the difference between the figures. Certainly, in the developed countries, there is a significant amount of food flowing into the non-household sector, especially into catering establishments and hospitals. This might explain the same discrepancies of 353-1,086 calories observed for the developed countries.

The food flowing into the household sector comes from many sources, i.e. through purchase or barter, gifts or pay, home produce, food gathered wild, and food from home stock. The coverage of these sources varies from survey to survey. As far as the food expenditure part of the record is concerned, the income/expenditure/budget surveys sometimes do not cover all the sources that are mentioned above. The majority of the surveys used here record only food purchased and home produce. A few of them, namely those from Finland, Greece and Trinidad & Tobago, include food obtained as gifts and food gathered wild in their measurements. The survey from the Fed. Rep. of Germany does not record food from home produce, nor food obtained as gifts, for households in urban areas. The surveys from Iraq and Pakistan record only food purchased. Only the surveys from France and India cover food from home stock.^{5/} These incomplete records of all food sources may also have contributed to the discrepancies between the two sets of data.

In the developing countries, where the proportions of food from home produce and from gathering wild are likely to be high, the amount of food that has gone unrecorded, where these two sources have not been included, may have contributed to the extremely high discrepancies. However, in some developing countries where the basic system of agricultural statistics is not well developed, national statistics, on which food balance sheets are based, may not record food gathered wild and home produce. In such cases the differences in the data obtained from the household surveys and from the food balance sheets may not be so large; both sources underestimate the level of food consumption.

The survey from Iraq shows a percentage difference of +25.3 per cent. This large discrepancy is, in part, due to the fact that the data on the food consumption is an average of two enumeration rounds which were conducted in July 1971 and January 1972 and the results of the survey conducted in January 1972 appear to

5/ Food obtained from household stocks may be extremely high in the developed countries where a fair number of households possess refrigerators and purchase their food less frequently.

overestimate the true level of per capita consumption since this month is a storage period for some main foodstuffs. It is known that the food consumption patterns are subject to seasonal variations, especially in the rural areas of some developing countries where communities are entirely self-sufficient in their food supply. If household surveys do not collect data for the whole year, the data obtained will not represent the daily average of the food consumed during the whole year, because no adjustment can be made for seasonal variation.

As indicated earlier, the food consumption surveys measure real food intakes in the household sector while food balance sheets measure food supplies both in the household and non-household sectors. Also, food balance sheets do not take into account losses and wastage at the household and non-household level. In view of this, the food consumption survey data should normally be lower than the food balance sheet data.

As expected, all three of the food consumption surveys conducted in developing countries show per capita daily calorie figures that are lower than those derived from food balance sheets. The difference varies from 89 to 568 calories or from -3.4 to -19.9 per cent. It is important to note here that the small difference (89 calories or -3.4 per cent) in the case of Tunisia is due to the fact that an attempt has been made to reconcile the food balance sheet and food consumption survey results. Therefore, a comparison of the two sets of data is not really appropriate for the purpose of this paper.

The deviations of the overall averages of total calories per capita have been graphically illustrated in Chart 2. The horizontal axis has been designated as the per capita daily calorie supply derived from food balance sheets while the vertical axis has been designated as the per capita daily calorie availability derived from the household surveys.

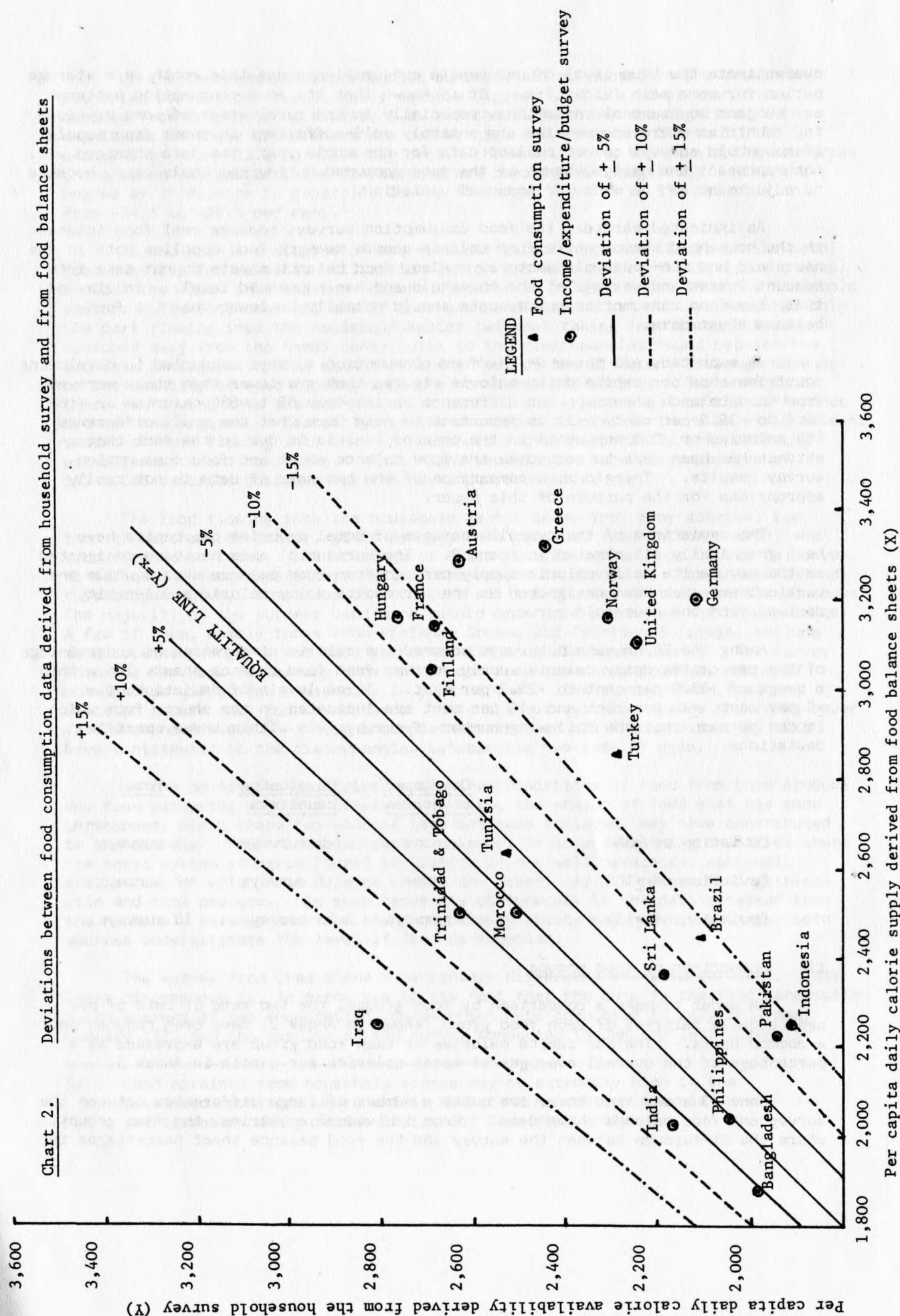
Among the 20 household surveys covered the calorie differences as a percentage of the per capita daily calorie supply derived from food balance sheets lie within a range of -33.9 per cent to +25.3 per cent. Three levels of deviation, i.e. +5 per cent, +10 per cent and +15 per cent are indicated on the chart, from which it can be seen that the following number of surveys lie within these specified deviations:

	<u>Developed</u> <u>countries</u>	<u>Developing</u> <u>countries</u>	<u>Total</u>
Deviation of +5%	none	3 surveys	3 surveys
Deviation of +10%	none	7 surveys	7 surveys
Deviation of +15%	3 surveys	10 surveys	13 surveys

ii) Comparison by food groups

In order to make a comparison by food groups, the two sets of data of per capita daily calories of each food group (shown in Annex 2) have been reduced on a common basis. The per capita calories of each food group are expressed as a percentage of the overall averages of total calories per capita in Annex 3.

Annex 3 shows that there are quite a number of large differences between the survey and food balance sheet data. From individual countries, the food groups, where the difference between the survey and the food balance sheet percentages is



greater than one third of the food balance sheet percentage, have been selected for special analysis. These 'major differences' are listed in Annex 4.

Neither Tunisia nor India have been included in Annex 4. Tunisia has been left out because of the attempted reconciliation between the two sets of data. Probably, the small differences, observed between the two sets of data for India (in Annex 3), result from the broad grouping (only five food groups).

In order to identify clearly in which food group major differences exist, a cross-country analysis for each food group has been made. The cross-country analysis has concentrated solely on the direction of the differences, i.e. positive or negative (Annex 5).

The highest number of major differences occurred within the food group of spices. Of the sixteen surveys involved, twelve show percentage contributions lower than the food balance sheets while three show higher contributions. Since spices contribute quite a small percentage to the per capita calorie consumption, the quantities of spices purchased or consumed were usually omitted by enumerators from the household surveys. However, in those countries where the contribution of spices is important (e.g. Morocco and Sri Lanka) the quantity of spices consumed or purchased were recorded.

As regards the group of stimulants, six surveys show lower percentages and six show higher percentages than the food balance sheets. The majority of the surveys do not measure quantities of stimulants consumed (e.g. coffee, cocoa, tea, hops and chicory roots), while food balance sheets always provide estimates. However, in the cases of those surveys that take into account the quantity of stimulant consumption, the data obtained are higher than the food balance sheet data. This may indicate that the quantity of stimulants are underestimated in the food balance sheets.

About half of the country surveys show major differences for the following groups: nuts and oilseeds, vegetables, and fish and seafood. As regards nuts and oilseeds, food balance sheets cover a large number of different kinds of nuts and oilseeds, while the majority of household surveys cover only a few kinds of nuts. As a result, food balance sheets show higher percentages. However, in Brazil, where the consumption of nuts and oilseeds is high, the survey shows a higher percentage than the food balance sheet. For vegetables, six surveys show higher and seven surveys show lower percentages than the food balance sheets. Usually, vegetable quantities are not covered well in current agricultural statistics (and hence in the preparation of the food balance sheets) particularly in the developing countries where a significant amount of the vegetables consumed are cultivated in garden holdings.

For sugar and honey, the household survey data tend to indicate lower percentage shares than the food balance sheet data. Sugar products, such as chocolate and sugar confectionary, are often purchased by members of the family without coming to the notice of the person who keeps the records. As a result the consumption of these commodities is usually underestimated by the household survey procedure.

Differences for roots and tubers are more pronounced among the developing countries, where many kinds of roots and tubers, such as potato, sweet potato, cassava, yam, taro cocoyam, etc., are consumed. With the exception of two cases (Morocco and Trinidad and Tobago) the differences were negative, probably because the surveys included only potatoes in their measurement.

The above is only a broad comparison by food group. A more detailed comparison cannot be undertaken at the FAO headquarters but could be carried out at the country level where the detailed survey data can be made available. However, it can be concluded that while there are slight differences for the groups of cereals and cereal products, and meat and offals, the differences are larger for the other food groups.

VI. Conclusion

Although both household surveys and food balance sheets provide food consumption data, discrepancies should be expected between the data obtained from these two sources. In fact, discrepancies are also to be expected between data from different types of household survey, namely, the income/expenditure/budget survey and the specialized food consumption survey.

Differences in the concepts, definitions and in the methodology used in food balance sheets and in household surveys, are the main reasons for the discrepancies. Food balance sheets provide data on food supplies for domestic utilization, while data on food consumption obtained through household surveys can be classified into two types: the first type, obtained mostly from income/expenditure/budget surveys in which value and quantities of each food item consumed in the household are recorded either by the interviewing or recording methods, is the quantity of food available to or acquired by the household; the second type is estimates of the quantities of food intakes, which is ideal from the nutritional point of view. This type of data is obtained from specialized food consumption surveys, in which food items are weighed and measured before being prepared for meals (sometimes plate-waste is also weighed) and members of the household are interviewed regarding food consumed away from the home.

In addition, it was noted that food balance sheets measure total quantity of food flowing into both the household and non-household sectors, without taking into account losses of edible food and nutrients in these sectors. The household surveys normally do not cover food consumption in the non-household sector. Among such surveys only the specialized food consumption surveys take into account losses and wastage at the household level. The difference regarding the coverage of the household and non-household sectors indicates that food consumption data derived from food balance sheets should be larger than the data derived from household surveys. The magnitude of discrepancy varies from one country to another, as it depends on the amount of food flowing into the non-household sector and on the differential of loss and wastage rates in the household and non-household sectors.

In developed countries, the opportunity for people to consume food in the non-household sector and the degree of loss and wastage both at the household and non-household level are high. It can, therefore, be anticipated that the discrepancy would be pronounced in developed countries. The results of the comparative study carried out for the 20 countries from which household survey data are available show that among the developed countries, the differences between the data from the two sources vary from 353 to 1,086 calories while among the developing countries the differences vary from 15 to 568 calories.

Measurement deficiencies also contribute to the discrepancies. The reliability of the data from food balance sheets depends on the available range and accuracy of basic statistics, such as production, storage and population levels on which food balance sheets are based, while that of the data from the household surveys depends on the magnitude of sampling and non-sampling errors. As far as the food expenditure part of the record is concerned, household surveys sometimes do not cover all food items consumed. Moreover, they do not attempt to record all sources of food,

e.g. food gathered wild or home produced is not always included. Discrepancies arising from these deficiencies would be pronounced in developing countries, where substantial parts of the food consumed or acquired are non-commercial and where basic systems of agricultural statistics are not well developed. At present, the contribution of such deficiencies to the discrepancies between data from the two sources cannot be properly assessed.

Both data sources have their own separate purposes and uses and for the assessment of the food consumption situation they should be used in a complementary manner. Food balance sheets provide data on the national average of food supplies which are suitable for estimating the overall shortages or surpluses in the food supply of a country but give no indication of the food consumption level obtained by people living in different parts of a country, or in different occupations or earning different income. Such supplementary information can only be obtained from household surveys that provide details on the distribution of food consumption among different groups of the population.

As far as the food consumption levels of the consumers is concerned, food consumption data obtained through household surveys give a better estimation of the actual level of food consumption (provided food eaten away from home is included) as the information is collected at the household which is an aggregate unit of persons actually partaking of the food consumed. However, in the absence of data from household surveys, food balance sheet data provide a good proxy for food consumption levels of the population.

It is necessary to note that this paper can only give an overview of the differences between the two sources. More detailed analysis should be attempted, in close collaboration with appropriate national agencies, at the country level where raw data of the survey can be made available. It is hoped that the results of this exercise will provide some useful information for countries in the preparation of the household surveys aimed at investigating the nutritional situation of the country and in the improvement of the basic statistics on which food balance sheets are based.

Annex 1

List of the Household Surveys Used for the Comparative Study

<u>Country survey</u>	<u>Year</u>	<u>Title of survey</u>
<u>Developed countries</u>		
<u>The Income/Expenditure/Budget Survey (Food availability or acquired)</u>		
Austria	1974/75	Consumption Expenditure Survey
Finland	1976	Household Survey - Consumption of Foodstuffs
France	1977	La Consommation Alimentaire en 1977
Germany, Fed. Rep. of	1978	Income and Expenditure Survey
Greece	1974	Household Expenditure Survey
Hungary	1971	National Food Consumption
Norway	1977-79	Survey of Consumer Expenditure
United Kingdom	1979	Household Food Consumption and Expenditure

Developing countries

The Income/Expenditure/Budget Survey (Food availability or acquired)

Bangladesh	1973/74	Household Expenditure Survey
India	1971/72	Calorie and Protein Values of Food Items Consumed Per Diem Per Consumer Unit in Urban and Rural Areas
Indonesia	1978	National Socio-Economic Survey
Iraq	1972	Household Budget and Living Conditions Survey
Morocco	1970/71	La Consommation et les Depenses de Menages
Pakistan	1971/72	Household Income and Expenditure Survey
Philippines	1975/76	Income and Food Consumption

Annex 1 (cont'd)

<u>Country survey</u>	<u>Year</u>	<u>Title of survey</u>
<u>Developing countries (cont'd)</u>		
<u>The Income/Expenditure/Budget Survey (Food availability or acquired)</u>		
Sri Lanka	1969/70	Socio-Economic Survey
Trinidad and Tobago	1970	National Household Food Consumption Survey
<u>The Food Consumption Survey (Food intakes)</u>		
Brazil	1974/75	Estudo Nacional de Despesa Familiar, Consumo Alimentar, Antropometria
Turkey	1974	National Nutrition Health and Food Consumption Survey
Tunisia	1975	Enquête Nationale sur le Budget et la Consommation des Menages

Annex 2.

Per capita daily calorie availability derived from the household surveys and the per capita daily calorie supply derived from food balance sheets classified by food group (in cal.)

Food group	Austria (1974/75)			Finland (1976)			France (1977)			Germany, F.R. (1978)			Greece (1974)		
	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)
Cereals & cereal products	688	770	-82	829	716	+113	642	748	-106	410	693	-283	967	1,212	-245
Roots and tubers	75	127	-52	128	178	-50	114	183	-69	99	177	-78	89	112	-23
Sugar and honey	316	508	-192	270	418	-148	170	431	-261	159	415	-256	157	309	-152
Pulses	7 ^{1/}	31 ^{1/}	-24	2 ^{1/}	15 ^{1/}	-13	15	22	-7	5	9	-4	59	69	-10
Nuts and oilseeds							8	20	-12	8	40	-32	-	80	-80
Vegetables	28	46	-18	16	12	+4	41	73	-32	30	47	-17	45	104	-59
Fruit	101	126	-25	98	88	+10	76	78	-2	61	142	-81	126	177	-51
Meat and offals	585	580	+5	497	448	+49	447	583	-136	564	682	-118	209	312	-103
Eggs	44	50	-6	38	41	-3	40	51	-11	52	66	-14	36	41	-5
Fish and seafood	10	14	-4	26	54	-28	12	32	-20	5	25	-20	27	27	-
Milk & milk products	248	376	-128	387	562	-175	277	316	-39	266	266	-	184	286	-102
Oils and fats	474	628	-154	335	480	-145	746	587	+159	347	614	-267	555	592	-37
Spices	-	4	-4	9	2	+7	-	2	-2	-	5	-5	-	2	-2
Stimulants	33	33	-	61	35	+26	45	24	+21	73	27	+46	-	5	-5
Other food items, n.e.c.	31 ^{2/}	-	+31	-	-	-	61 ^{3/}	-	+61	43 ^{3/}	-	+43	-	-	-
All food groups (excluding alcoholic beverages)	2640	3293	-653	2696	3049	-353	2694	3150	-456	2122	3208	-1086	2454	3328	-874

Note: 1/ Including nuts and oilseeds
 2/ Prepared food
 3/ Soft drinks
 4/ Preliminary data

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Annex 2. (cont'd)

Food group	Hungary (1971)			Norway (1977/79)			United Kingdom (1979)			Bangladesh (1973/74)			Brazil (1974/75)		
	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)
Cereals & cereal products	1,153	1,261	-108	619	778	-159	647	702	-55	1,646	1,594	+52	756	881	-125
Roots and tubers	102	141	-39	108	170	-62	114	205	-91	9	37	-28	231	257	-26
Sugar and honey	247	366	-119	252	428	-176	208	425	-217	44	69	-24	277	435	-158
Pulses	32 ^{1/}	30 ^{1/}	+2	-	14	-14	-	30	-30	147	26	+121	-	-	-
Nuts and oilseeds				8	21	-13	-	36	-36	-	2	-2	237	31	+206
Vegetables	41	62	-21	21	30	-9	74	46	+28	4	8	-4	20 ^{4/}	202 ^{4/}	-182
Fruit	78	92	-14	80	96	-16	60	63	-3	-	23	-23	39	113	-74
Meat and offals	386 ^{2/}	462 ^{2/}	-76	332	380	-48	376	528	-152	10	14	-4	185 ^{5/}	197 ^{5/}	-12
Eggs	51	55	-4	36	37	-1	41	52	-11	31	2	+29	115 ^{6/}	125 ^{6/}	-10
Fish and seafood				63	52	+11	24	20	+4	19	21	-2	-	-	-
Milk & milk products	235	170	+65	385	498	-113	322	356	-34	26	19	+7	-	-	-
Oils and fats	446	480	-34	361	583	-222	343	629	-286	50	51	-1	239	191	+48
Spices	-	32	-32	-	2	-2	-	3	-3	-	15	-15	-	-	-
Stimulants	-	14	-14	48	80	-32	7	16	-9	-	-	-	11	7	+4
Other food items, n.e.c.	-	-	-	-	-	-	38	-	+38	-	-	-	-	-	-
All food groups (excluding alcoholic beverages)	2771	3165	-394	2313	3169	-856	2254	3111	-857	1986	1880	+106	2110	2439	-329

Note: 1/ Including nuts and oilseeds
 2/ Prepared food
 3/ Preliminary data
 4/ Including pulses
 5/ Including fish
 6/ Including milk and milk products

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	Indonesia (1978)			India (1971/72)			Iraq (1971/72)			Morocco (1970/71)			Pakistan (1971/72)		
	H.S.	F.B.S. ^{1/}	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)
Cereals & cereal products	1295	1494	-199	1739 ^{3/}	1585 ^{3/}	+154	1953	1384	+569	1338	1708	-370	1450	1409	+41
Roots and tubers	171	199	-28				10	8	+2	47	21	+26	12	11	+1
Sugar and honey	85	139	-54				302	322	-20	367	265	+102	128	276	-148
Pulses	162 ^{2/}	215 ^{2/}	-53	155 ^{2/}	182 ^{2/}	-27	56	41	+15	51	40	+11	63	74	-11
Nuts and oilseeds							-	13	-13	-	16	-16	-	2	-2
Vegetables	23	9	+14	76 ^{4/}	69 ^{4/}	+7	39	74	-35	28	18	+10	7	18	-11
Fruit	25	24	+1				109	74	+35	65	59	+6	-	40	-40
Meat and offals	13	17	-4	111 ^{5/}	67 ^{5/}	+44	65	79	-14	112	70	+42	36	37	-1
Eggs	13	4	+9				14	11	+3	-	8	-8	3	1	+2
Fish and seafood	33	22	+11				11	6	+5	13	8	+5	2	2	-
Milk & milk products	7	5	+2				33	67	-34	52	40	+12	97	164	-67
Oils and fats	88	116	-28	89	123	-34	225	162	+63	371	225	+146	153	182	-29
Spices	-	4	-4				-	5	-5	67	16	+51	-	6	-6
Stimulants	2	1	+1				-	3	-3	3	3	-	-	1	-1
Other food items, n.e.c.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All food groups (excluding alcoholic beverages)	1917	2249	-332	2170	2026	+144	2817	2249	+568	2514	2497	+17	1951	2223	-272

Note: 1/ Preliminary data

2/ Including nuts and oilseeds

3/ Including roots, tubers and sugar

4/ Including fruits, spices and prepared foods

5/ Including milk, eggs and fish

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Food group	Philippines (1975/76)			Sri Lanka (1969/70)			Trinidad & Tobago (1970)			Turkey (1974)			Tunisia (1975)		
	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)
Cereals & cereal products	1362	1289	+73	1221	1335	-114	1105	1110	-5	1328	1611	-283	1447	1497	-50
Roots and tubers	49	107	-58	29	75	-46	147	63	+84	26	82	-56	99	100	-1
Sugar and honey	121	200	-79	200	248	-48	267	412	-145	138	229	-91	157 ^{5/}	233 ^{5/}	-76
Pulses	44	10	+34	52	59	-7	129 ^{3/}	142 ^{3/}	-13	34	98	-64	64	76	-12
Nuts and oilseeds	-	26	-26	501 ^{1/}	447 ^{1/}	+54				-	102	-102			
Vegetables	25	18	+7	32 ^{2/}	64 ^{2/}	-32	38	15	+23	101	76	+25			
Fruit	88	65	+23				71	74	-3	100	163	-63	65	75	-10
Meat and offals	110	109	+1	10	12	-2	130	144	-14	124	102	+22	76	86	-10
Eggs	13	15	-2	3	6	-3	26	23	+3	14	10	+4	91	97	-6
Fish and seafood	71	70	+1	39	33	+6	26	23	+3	5	14	-9	8	10	-2
Milk & milk products	85	78	+67	32	39	-7	300	140	+160	112	102	+10			
Oils and fats	86	94	-8				360	337	+23	310	264	+46	458	445	+13
Spices	-	14	-14	59	43	+16	34 ^{4/}	18 ^{4/}	+16	-	5	-5	22	9	+13
Stimulants	-	4	-4	14	2	+12	-	-	-	-	2	-2	56 ^{6/}	4	+52
Other food items, n.e.c.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All food groups (excluding alcoholic beverages)	2054	2039	+15	2192	2363	-171	2633	2501	+132	2292	2860	-568	2543	2632	-89

Note: 1/ Including oil and fats

2/ Including fruits

3/ Including nuts and oilseeds

4/ Including stimulants

5/ Including vegetables

6/ Including snacks (food eaten between the main meals)

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Annex 3.

Percentage contribution of various food groups to per capita daily calorie availability derived from the household surveys and to per capita daily calorie supply derived from food balance sheets

Food group	Austria (1974/75)			Finland (1976)			France (1977)			Germany, F.R. (1978)			Greece (1974)		
	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)
Number of calories	2640	3293	-653	2696	3049	-353	2694	3150	-456	2122	3208	-1086	2454	3328	-874

(per cent)

Cereals & cereal products	26.1	23.4	+2.7	30.7	23.5	+7.2	23.8	23.8	-	19.3	21.6	-2.3	39.4	36.4	+3.0
Roots and tubers	2.8	3.9	-1.1	4.8	5.8	-1.0	4.2	5.8	-1.6	4.7	5.5	-0.8	3.6	3.4	+0.2
Sugar and honey	12.0	15.4	-3.4	10.0	13.7	-3.7	6.3	13.7	-7.4	7.5	12.9	-5.4	6.4	9.3	-2.9
Pulses	0.3 ^{1/}	0.9 ^{1/}	-0.6	0.1 ^{1/}	0.5 ^{1/}	-0.4	0.6	0.7	-0.1	0.2	0.3	-0.1	2.4	2.1	+0.3
Nuts and oilseeds							0.3	0.6	-0.3	0.4	1.2	-0.8	-	2.4	-2.4
Vegetables	1.1	1.4	-0.3	0.6	0.4	+0.2	1.5	2.3	-0.8	1.4	1.5	-0.1	1.8	3.1	-1.3
Fruit	3.8	3.8	-	3.6	2.9	+0.7	2.8	2.5	+0.3	2.9	4.4	-1.5	5.2	5.3	-0.1
Meat and offals	22.1	17.6	+4.5	18.4	14.7	+3.7	16.6	18.5	-1.9	26.6	21.3	+5.3	8.5	9.4	-0.9
Eggs	1.7	1.5	+0.2	1.4	1.4	-	1.5	1.6	-0.1	2.5	2.1	+0.4	1.5	1.2	+0.3
Fish and seafood	0.4	0.4	-	1.0	1.8	-0.8	0.4	1.0	-0.6	0.2	0.8	-0.6	1.1	0.8	+0.3
Milk & milk products	9.4	11.4	-2.0	14.4	18.4	-4.0	10.3	10.0	+0.3	12.5	8.3	+4.2	7.5	8.6	-1.1
Oils and fats	17.9	19.1	-1.2	12.4	15.7	-3.3	27.7	18.6	+9.1	16.4	19.1	-2.7	22.6	17.8	+4.8
Spices	-	0.1	-0.1	0.3	0.1	+0.2	-	0.1	-0.1	-	0.2	-0.2	-	0.1	-0.1
Stimulants	1.2	1.1	+0.1	2.3	1.1	+1.2	1.7	0.8	+0.9	3.4	0.8	+2.6	-	0.1	-0.1
Other food items, n.e.c.	1.2 ^{2/}	-	+1.2	-	-	-	2.3 ^{3/}	-	+2.3	2.0 ^{3/}	-	+2.0	-	-	-
All food groups (excluding alcoholic beverages)	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-

Note: 1/ Including nuts and oilseeds
2/ Prepared food
3/ Soft drinks
4/ Preliminary data

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Annex 3. (cont'd)

Food group	Hungary (1971)			Norway (1977/79)			United Kingdom (1979)			Bangladesh (1973/74)			Brazil (1974/75)		
	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S. ^{3/}	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)
Number of calories	2771	3165	-394	2313	3169	-856	2254	3111	-857	1986	1880	+106	2110	2439	-329

(per cent)

Cereals & cereal products	41.6	39.8	+1.8	26.8	24.6	+2.2	28.7	22.6	+6.1	82.9	84.8	-1.9	35.8	36.1	-0.3
Roots and tubers	3.7	4.5	-0.8	4.7	5.4	-0.7	5.1	6.6	-1.5	0.4	2.0	-1.6	10.9	10.5	+0.4
Sugar and honey	8.9	11.6	-2.7	10.9	13.5	-2.6	9.2	13.7	-4.5	2.2	3.6	-1.4	13.1	17.9	-4.8
Pulses	1.2 ^{1/}	0.9 ^{1/}	+0.3	-	0.4	-0.4	-	0.9	-0.9	7.4	1.4	+6.0			
Nuts and oilseeds				0.3	0.7	-0.4	-	1.2	-1.2	-	0.1	-0.1	11.2	1.3	+9.9
Vegetables	1.5	2.0	-0.5	0.9	0.9	-	3.3	1.5	+1.8	0.2	0.4	-0.2	0.9 ^{4/}	8.3 ^{4/}	-7.4
Fruits	2.8	2.9	-0.1	3.5	3.0	+0.5	2.7	2.0	+0.7	-	1.2	-1.2	1.9	4.6	-2.7
Meat and offals	13.9 ^{2/}	14.6 ^{2/}	-0.7	14.4	12.0	+2.4	16.7	17.0	-0.3	0.5	0.8	-0.3	8.8 ^{5/}	8.1 ^{5/}	+0.7
Eggs	1.8	1.7	+0.1	1.5	1.2	+0.3	1.8	1.7	+0.1	1.6	0.1	+1.5	5.6 ^{6/}	5.1 ^{6/}	+0.5
Fish and seafood				2.7	1.6	+1.1	1.1	0.7	+0.4	1.0	1.1	-0.1			
Milk & milk products	8.5	5.4	+3.1	16.6	15.7	+0.9	14.3	11.4	+2.9	1.3	1.0	+0.3			
Oils and fats	16.1	15.2	+0.9	15.6	18.4	-2.8	15.2	20.2	-5.0	2.5	2.7	-0.2	11.3	7.8	+3.5
Spices	-	1.0	-1.0	-	0.1	-0.1	-	-	-	-	0.8	-0.8	-	-	-
Stimulants	-	0.4	-0.4	2.1	2.5	-0.4	0.2	0.5	-0.3	-	-	-	0.5	0.3	+0.2
Other food items, n.e.c.	-	-	-	-	-	-	1.7	-	+1.7	-	-	-	-	-	-
All food groups (excluding alcoholic beverages)	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-

Note: 1/ Including nuts and oilseeds
2/ Prepared food
3/ Preliminary data
4/ Including pulses
5/ Including fish
6/ Including milk and milk products

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Food group	Indonesia (1978)			India (1971/72)			Iraq (1972)			Morocco (1970/71)			Pakistan (1971/72)		
	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)
Number of calories	1917	2249	-332	2170	2026	+144	2817	2249	+563	2514	2497	+17	1951	2223	-272
(per cent)															
Cereals & cereal products	67.5	66.4	+1.1	80.1 ^{3/}	78.2 ^{3/}	+1.9	69.3	61.5	+7.8	53.2	68.4	-15.2	74.3	63.4	+10.9
Roots and tubers	8.9	8.8	+0.1				0.3	0.4	-0.1	1.9	0.9	+1.0	0.6	0.5	+0.1
Sugar and honey	4.4	6.2	-1.8				10.7	14.3	-3.6	14.6	10.6	+4.0	6.6	12.4	-5.8
Pulses	8.5 ^{2/}	9.5 ^{2/}	-1.0	7.2 ^{2/}	9.0 ^{2/}	-1.8	2.0	1.8	+0.2	2.0	1.6	+0.4	3.2	3.3	-0.1
Nuts and oilseeds							-	0.6	-0.6	-	0.7	-0.7	-	0.1	-0.1
Vegetables	1.2	0.4	+0.8	3.5 ^{4/}	3.4 ^{4/}	+0.1	1.4	3.3	-1.9	1.1	0.7	+0.4	0.4	0.8	-0.4
Fruit	1.3	1.1	+0.2				3.9	3.3	+0.6	2.6	2.4	+0.2	-	1.8	-1.8
Meat and offals	0.7	0.8	-0.1	5.1 ^{5/}	3.3 ^{5/}	+1.8	2.3	3.5	-1.2	4.4	2.8	+1.6	1.9	1.7	+0.2
Eggs	0.7	0.2	+0.5				0.5	0.5	-	-	0.3	-0.3	0.1	-	+0.1
Fish and seafood	1.7	1.0	+0.7				0.4	0.3	+0.1	0.5	0.3	+0.2	0.1	0.1	-
Milk & milk products	0.4	0.2	+0.2				1.2	3.0	-1.8	2.1	1.6	+0.5	5.0	7.4	-2.4
Oils and fats	4.6	5.2	-0.6	4.1	6.1	-2.0	8.0	7.2	+0.8	14.8	9.0	+5.8	7.8	8.2	-0.4
Spices	-	0.2	-0.2				-	0.2	-0.2	2.7	0.6	+2.1	-	0.3	-0.3
Stimulants	0.1	-	+0.1				-	0.1	-0.1	0.1	0.1	-	-	-	-
Other food items, n.e.c.	-	-	-				-	-	-	-	-	-	-	-	-
All food groups (excluding alcoholic beverages)	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-

Note: 1/ Preliminary data 4/ Including fruits, spices, and prepared foods
 2/ Including nuts and oilseeds 5/ Including milk, eggs and fish
 3/ Including roots, tubers and sugar

Food group	Philippines (1975)			Sri Lanka (1969/70)			Trinidad & Tobago (1970)			Turkey (1974)			Tunisia (1975)		
	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)	H.S.	F.B.S.	Difference (HS - FBS)
Number of calories	2054	2039	+15	2192	2363	-171	2633	2501	+132	2292	2860	-568	2543	2632	-89

(per cent)

Cereals & cereal products	66.6	63.2	+3.4	55.7	56.5	-0.8	42.0	44.4	-2.4	58.0	56.3	+1.7	56.9	56.9	-
Roots and tubers	2.3	5.2	-2.9	1.3	3.2	-1.9	5.6	2.5	+3.1	1.1	2.9	-1.8	3.9 ^{5/}	3.8 ^{5/}	+0.1
Sugar and honey	5.8	9.8	-4.0	9.1	10.5	-1.4	10.1	16.5	-6.4	6.0	8.0	-2.0	6.2	8.8	-2.6
Pulses	2.1	0.5	+1.6	2.4	2.5	-0.1	4.9 ^{3/}	5.7 ^{3/}	-0.8	1.5	3.4	-1.9	2.5	2.9	-0.4
Nuts and oilseeds	-	1.3	-1.3	22.8 ^{1/}	18.9 ^{1/}	+3.9	-	-	-	-	3.4	-3.4	-	-	-
Vegetables	1.2	0.9	+0.3	1.5 ^{2/}	2.7 ^{2/}	-1.2	1.4	0.6	+0.8	4.4	2.7	+1.7	-	-	-
Fruit	4.3	3.2	+1.1				2.7	2.9	-0.2	4.4	5.7	-1.3	2.5	2.8	-0.3
Meat and offals	5.4	5.4	-	0.5	0.5	-	4.9	5.8	-0.9	5.4	3.6	+1.8	3.0	3.3	-0.3
Eggs	0.6	0.7	-0.1	0.1	0.3	-0.2	1.0	0.9	+0.1	0.6	0.4	+0.2	3.6	3.7	-0.1
Fish and seafood	3.5	3.4	+0.1	1.8	1.4	+0.4	1.0	0.9	+0.1	0.2	0.5	-0.3	0.3	0.4	-0.1
Milk & milk products	4.1	0.9	+3.2	1.5	1.6	-0.1	11.4	5.6	+5.8	4.9	3.6	+1.3	-	-	-
Oils and fats	4.1	4.6	-0.5				13.7	13.5	+0.2	13.5	9.2	+4.3	18.0	16.9	+1.1
Spices	-	0.7	-0.7	2.7	1.8	+0.9	1.3 ^{4/}	0.7 ^{4/}	+0.6	-	0.2	-0.2	0.9	0.3	+0.6
Stimulants	-	0.2	-0.2	0.6	0.1	+0.5	-	-	-	-	0.1	-0.1	2.2 ^{6/}	0.2	+2.0
Other food items, n.e.c.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All food groups (excluding alcoholic beverages)	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-

Note: 1/ Including oil and fats 4/ Including stimulants
 2/ Including fruits 5/ Including vegetables
 3/ Including nuts and oilseeds 6/ Including snacks (food eaten between the main meals)

Annex 4

Major differences between the percentage of distribution of various food groups to the overall calorie supply/consumption derived from the household surveys and from food balance sheets

<u>Country</u>	<u>Food Group</u>	<u>Percentage of contribution to overall averages of total calorie per capita</u>		
		<u>H.S.</u>	<u>F.B.S.</u>	<u>Difference (H.S. - F.B.S.)</u>
<u>Developed countries:</u>				
<u>The income/expenditure/budget surveys</u>				
Austria (1974/75)				
	Spices	-	0.1	-0.1
Finland (1976)				
	Vegetables	0.6	0.4	+0.2
	Fish and seafood	1.0	1.8	-0.8
	Spices	0.3	0.1	+0.2
	Stimulants	2.3	1.1	+1.2
France (1977)				
	Sugar and honey	6.3	13.7	-7.4
	Nuts and oilseeds	0.3	0.6	-0.3
	Vegetables	1.5	2.3	-0.8
	Fish and seafood	0.4	1.0	-0.6
	Oils and fats	27.7	18.6	+9.1
	Spices	-	0.1	-0.1
	Stimulants	1.7	0.8	+0.9
Germany, Fed.Rep. of (1978)				
	Sugar and honey	7.5	12.9	-5.4
	Nuts and oilseeds	0.4	1.2	-0.8
	Fruit	2.9	4.4	-1.5
	Fish and seafood	0.2	0.8	-0.6
	Milk and milk products	12.5	8.3	+4.2
	Spices	-	0.2	-0.2
	Stimulants	3.4	0.8	+2.6

<u>Country</u>	<u>Food Group</u>	<u>Percentage of contribution to overall averages of total calorie per capita</u>		
		<u>H.S.</u>	<u>F.B.S.</u>	<u>Difference (H.S. - F.B.S.)</u>
<u>Developed countries (cont'd):</u>				
<u>The income/expenditure/budget surveys (cont'd):</u>				
Greece (1974)				
	Nuts and oilseeds	-	2.4	-2.4
	Vegetables	1.8	3.1	-1.3
	Fish and seafood	1.1	0.8	+0.3
	Spices	-	0.1	-0.1
	Stimulants	-	0.1	-0.1
Hungary (1971)				
	Milk and milk products	8.5	5.4	+3.1
	Spices	-	1.0	-1.0
	Stimulants	-	0.4	-0.4
Norway (1977-79)				
	Pulses	-	0.4	-0.4
	Nuts and oilseeds	0.3	0.7	-0.4
	Fish and seafood	2.7	1.6	+1.1
	Spices	-	0.1	-0.1
United Kingdom (1979)				
	Pulses	-	0.9	-0.9
	Nuts and oilseeds	-	1.2	-1.2
	Vegetables	3.3	1.5	+1.8
	Fruit	2.7	2.0	+0.7
	Fish and seafood	1.1	0.7	+0.4
	Stimulants	0.2	0.5	-0.3

<u>Country</u>	<u>Food Group</u>	<u>Percentage of contribution to overall averages of total calorie per capita</u>		
<u>Developing countries</u>		<u>H.S.</u>	<u>F.B.S.</u>	<u>Difference (H.S. - F.B.S.)</u>
<u>The income/expenditure/budget surveys</u>				
Bangladesh (1973/74)				
	Roots and tubers	0.4	2.0	-1.6
	Sugar and honey	2.2	3.6	-1.4
	Pulses	7.4	1.4	+6.0
	Nuts and oilseeds	-	0.1	-0.1
	Vegetables	0.2	0.4	-0.2
	Fruit	-	1.2	-1.2
	Eggs	1.6	0.1	+1.5
	Spices	-	0.8	-0.8
Indonesia (1978)				
	Vegetables	1.2	0.4	+0.8
	Eggs	0.7	0.2	+0.5
	Fish and seafood	1.7	1.0	+0.7
	Milk and milk products	0.4	0.2	+0.2
	Spices	-	0.2	-0.2
	Stimulants	0.1	-	+0.1
Iraq (1972)				
	Nuts and oilseeds	-	0.6	-0.6
	Vegetables	1.4	3.3	-1.9
	Meat and offals	2.3	3.5	-1.2
	Milk and milk products	1.2	3.0	-1.8
	Spices	-	0.2	-0.2
	Stimulants	-	0.1	-0.1
Morocco (1970/71)				
	Roots and tubers	1.9	0.9	+1.0
	Sugar and honey	14.6	10.6	+4.0
	Nuts and oilseeds	-	0.7	-0.7
	Vegetables	1.1	0.7	+0.4

<u>Country</u>	<u>Food Group</u>	<u>Percentage of contribution to overall averages of total calorie per capita</u>		
		<u>H.S.</u>	<u>F.B.S.</u>	<u>Difference (H.S. - F.B.S.)</u>
<u>Developing countries (cont'd)</u>				
<u>The income/expenditure/budget surveys</u>				
Morocco (1970/71) cont'd.				
	Meat and offals	4.4	2.8	+1.6
	Eggs	-	0.3	-0.3
	Fish and seafood	0.5	0.3	+0.2
	Oils and fats	14.8	9.0	+5.8
	Spices	2.7	0.6	+2.1
Pakistan (1971/72)				
	Sugar and honey	6.6	12.4	-5.8
	Nuts and oilseeds	-	0.1	-0.1
	Vegetables	0.4	0.8	-0.4
	Fruit	-	1.8	-1.8
	Eggs	0.1	-	+0.1
	Spices	-	0.3	-0.3
Philippines (1975/76)				
	Roots and tubers	2.3	5.2	-2.9
	Sugar and honey	5.8	9.8	-4.0
	Pulses	2.1	0.5	+1.6
	Nuts and oilseeds	-	1.3	-1.3
	Fruit	4.3	3.2	+1.1
	Milk and milk products	4.1	0.9	+3.2
	Spices	-	0.7	-0.7
	Stimulants	-	0.2	-0.2
Sri Lanka (1965-70)				
	Roots and tubers	1.3	3.2	-1.9
	Vegetables	1.5	2.7	-1.2
	Eggs	0.1	0.3	-0.2
	Spices	2.7	1.8	+0.9
	Stimulants	0.6	0.1	+0.5

Annex 5.

Number of major positive and negative differences between the composition of per capita calorie supply/consumption derived from the household surveys and from food balance sheets

[illegible]

Annex 6

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